

REMARKS

This Response, submitted in reply to the Office Action dated July 16, 2007, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-17 are all the claims pending in the application.

I. Rejection of claims 1-3, 8-10, 12-15 and 17 under 35 U.S.C. § 102

Claims 1-3, 8-10, 12-15 and 17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Lakshman et al. (U.S. Patent No. 6,341,130; hereinafter “Lakshman”).

Claim 1 is directed to a packet classification apparatus using a field level tries structure and the apparatus includes a main processing part for generating and maintaining the field level tries structure, which organizes a multi-field packet by field in a hierarchical structure for classifications. The Examiner asserts that Fig. 9B and col. 13, lines 15-48 of Lakshman teaches this aspect of the claim.

The respective column and lines of Lakshman cited by the Examiner describes a virtual interval and point propagation to reduce search time of a classification algorithm. However, there is no teaching or suggestion of a main processing part of a packet classification apparatus, as claimed.

Further, Lakshman does not disclose a field level tries structure. Col. 13, lines 1-11 of Lakshman appears to disclose a trie search according to bits of a source address. Therefore, Lakshman appears to suffer from the same deficiencies in the prior art as discussed on page 3 of the Applicant’s specification. Specifically, that prior art uses a grid of tries in which a switch pointer is used and a query procedure is implemented bit-by-bit. Therefore, Lakshman does not teach the claimed field level tries structure.

Claim 1 further recites “**a plurality of classification engines, each** classification engine provided with **a first classification part** for performing queries and updates and processing a prefix lookup represented by an IP address lookup, and **a second classification part** for proceeding with packet classification by field based on a result of the first classification part in order to process a range lookup belonging to the result.”

The Examiner appears to concede that Lakshman does not teach a plurality of classification engines, therefore the Examiner asserts that it would be obvious to have multiple forward engines in a network for packet classification. See page 2, para. 2 of Office Action. Applicant submits that claim 1 was rejected as being anticipated by Lakshman. Since the Examiner appears to concede that Lakshman does not teach a plurality of classification engines, that is, that Lakshman does not teach or suggest every element of claim 1, Applicant submits that Lakshman does not anticipate claim 1. Consequently, Applicant submits that the grounds for the Examiner’s rejection should be corrected.

Further, Applicant submits that Lakshman does not teach a plurality of classification engines as claimed.

The Examiner asserts that the field processor 1035 of Lakshman teaches the claimed first classification part, citing Fig. 10, col. 4, lines 3-6; col. 7, lines 50-59; col. 13, lines 18-22; and col. 14, lines 8-9, in support. Field processor 1035 of Lakshman updates fields of the packet stored in pipeline register 1025 based on the identified filter rule to be applied to the incoming packet. See col. 14, lines 5-12. However, there is no teaching or suggestion that field processor 1035 performs queries or processes a prefix lookup represented by an IP address lookup as claimed.

The Examiner asserts that a second classification part is disclosed in Figs. 9A and 9B and col. 13, lines 22-25, 20-48 and 51-60. Figs. 9A and 9B illustrate a packet filter employing virtual intervals. However, there is no teaching or suggestion of a second classification part of a packet classification apparatus. Further, the respective column and lines of Lakshman cited by the Examiner merely describe the use of virtual intervals. There is no teaching or suggestion of a second classification part for proceeding with packet classification by field based on a result of the first classification part in order to process a range lookup belonging to the result, as claimed.

For at least the above reasons, claim 1 and its dependent claims should be deemed allowable. To the extent independent claims 13 and 14 recite similar subject matter, claims 13 and 14 and their dependent claims should be deemed allowable for at least the same reasons.

II. Rejection of claims under 35 U.S.C. § 103

Claims 4, 11 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lakshman in view of Eatherton et al. (U.S. Patent No. 6,560,610; hereinafter “Eatherton”). Claims 4, 11, and 16 should be deemed allowable by virtue of their dependency to claims 1 and 14 for at least the reasons set forth above. Moreover, Eatherton does not cure the deficiencies of Lakshman.

Claim 4 recites “wherein the first classification part of each classification engine stores fields of a prefix format and uses a ternary content addressable memory (TCAM) to search the stored fields.” The Examiner asserts that Eatherton teaches this aspect of the claim, however, Eatherton appears to at most teach a content addressable memory (CAM) and not a ternary content addressable memory, as claimed. Consequently, claim 4 should be deemed allowable.

III. Rejection of claims 5 and 6 under 35 U.S.C. § 103

Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lakshman in view of Lampson (IP Lookups Using Multiway and Multicolumn Search, IEEE Vol. 7, No. 3, June 1999; hereinafter “Lampson”). Claims 5 and 6 should be deemed allowable by virtue of their dependency to claim 1 for at least the reasons set forth above. Moreover, Lampson does not cure the deficiencies of Lakshman.

IV. Rejection of claim 7 under 35 U.S.C. § 103

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Lakshman in view of Bergantino et al. (U.S. Patent No. 6,798,778; hereinafter “Bergantino”). Claim 7 should be deemed allowable by virtue of its dependency to claim 1 for at least the reasons set forth above. Moreover, Bergantino does not cure the deficiencies of Lakshman.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: October 16, 2007